

REMARKS

1. Status of claims

After entry of the above amendment, claims 1-19 are pending and under consideration.

2. Support for amendment

Claims 1, 2, and 14 restate the text of the claims in order to improve their clarity and find support in the specification at p. 5, lines 6-15. No new matter has been added by this amendment.

3. Claim rejections under 35 U.S.C. § 112, second paragraph

The Examiner rejected claims 1, 7, and 14, as allegedly being indefinite for having an unclear definition of Zn as a polycyclic moiety with n possibly being 1. The above amendment of claims 1 and 14 clarifies each m is independently an integer from 1 to about 5, Z is an aromatic moiety, and each n is independently an integer from 1 to about 6. Therefore, Applicants submit these claims, and all claims dependent thereon, are clear and the basis for this rejection has been removed.

The Examiner also rejected claim 2 as allegedly being indefinite for reciting a minimum total of a+b of 0.6, which is incompatible with a maximum total of c+d of 0.6 under the limitation of claim 1 that a+b+c+d = 1. The above amendment of claim 2 clarifies the maximum total of c+d is 0.4. As for the maximum of either a or b being 0.7, the claim, as written, recites that the maximum value for a or b is less than 0.7 ("< 0.7"), which is compatible with c+d having a minimum value greater than zero ("> 0"). Therefore, Applicants submit claim 2, as amended, is clear and the basis for this rejection has been removed.

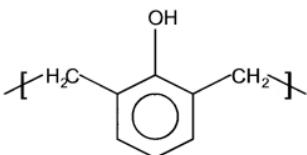
4. *Claim rejections under 35 U.S.C. § 103(a)*

The Examiner rejected claims 1, 3-16, and 19 as being unpatentable over Sakomoto, *et al.*, US 6,515,073 ("Sakomoto"). Applicants traverse this rejection.

The Examiner pointed to the examples of Sakomoto as allegedly teaching the cocondensation of trimethoxysilane and methyl orthosilicate in the presence of nitric acid, to form a siloxane resin, followed by condensation of a phenolic novolak resin to the siloxane resin. Sakomoto neither teaches nor suggests forming the composition of present claim 1.

First, there is no evidence that Sakomoto performed any of the alleged cocondensations in its examples. In Sakomoto Example 1, a solution containing trimethoxysilane, methyl orthosilicate, and nitric acid was prepared, but the material was stored at room temperature (20°C). This is in contrast with Sakomoto's teaching at col. 7, lines 7-9 that "[i]n order to reduce the reaction time... *heating* be effected at a temperature of not higher than 80°C" (emphasis added). Further, at col. 7, lines 6-7, Sakomoto teaches that hydrolysis is normally completed in from about 5 to 100 hours; Sakomoto Example 1 does not refer to any such hydrolysis period and instead simply says the alkoxysilane solution was added to a phenolic novolak resin. In addition, the use of the term "alkoxysilane" indicates that cocondensation of trimethoxysilane and methyl orthosilicate did not occur. Sakomoto Example 1 also does not refer to any time period during which any alleged condensation of phenolic novolak resin to the alkoxysilanes would have occurred. This is in keeping with the entire teachings of Sakomoto, which are entirely silent about reaction conditions in which any alleged condensation of a thermosetting resin to an alkoxysilane can occur. Thus, Sakomoto does not teach or suggest any composition comprising a siloxane resin as defined by claim 1.

Second, the ordinary skilled artisan will understand the term "a phenolic novolak resin" to refer to a resin having the following structure:



Considered strictly for the sake of argument, even if Sakomoto were to be considered to have taught a condensation between a phenolic novolak resin and an alkoxy silane, any possible condensation of a phenolic novolak resin with an alkoxy silane would occur across the hydroxyl group, resulting in a material containing the moiety Si-O-Ph. Such a material is outside the scope of the composition recited by claim 1.

Further, and contrary to the Examiner's assertion of equivalence, Sakomoto provides no guidance to replace the phenolic novolak resin with a compound yielding a -O-(CH₂)_m-Z_n moiety, such as a 9-anthracene methylene moiety. Sakomoto teaches phenolic resins are "particularly preferred" (col. 4, lines 63-64). At col. 5, line 12 to col. 6, line 6, Sakomoto presents a laundry list of benzophenone-, anthracene-, and naphthalene-based compounds but provides no guidance to the person of ordinary skill in the art as to which of the many dozen listed should be considered.

In addition, Sakomoto provides no guidance to the person of ordinary skill in the art to consider only the siloxane resins recited by the present claims. Sakomoto's general formula and laundry list of specific compounds (col. 2, line 41 to col. 4, line 44) encompass both dialkoxy silanes and trialkoxy silanes having silicon-carbon bonds, which are not recited by the present claims.

For at least the foregoing reasons, claim 1 and all claims dependent thereon are patentable over Sakomoto.

Also, Sakomoto does not teach a method for preparing a dyed siloxane resin. Claim 7 recites two reacting steps, one involving the reaction of siloxanes to produce a first siloxane resin, and a second involving the reaction of the first siloxane resin with a compound having the formula HO-(CH₂)_m-Z_n. Sakomoto provides no teaching of a reaction of a first siloxane resin with a compound having the formula HO-(CH₂)_m-Z_n. It merely teaches “incorporation” into a composition comprising an alkoxy silane or “mixing” a thermosetting resin with an alkoxy silane at col. 6, lines 7-8 or col. 8, lines 1-4, respectively. The composition can be cured after deposition onto a substrate, which the skilled artisan will understand as setting the thermosetting resin in the composition. During curing of the composition of Sakomoto, the thermosetting resin would be expected to set, not condense with the alkoxy silane. Further, considered strictly for the sake of argument, even if Sakomoto were considered to suggest such a condensation, Sakomoto does not guide the skilled artisan to any reaction conditions, such as temperature and duration, required for such a reaction. This is in contrast to the present description, which provides such guidance at p. 6, line 25 to p. 7, line 10. For at least the foregoing reasons, claim 7 and all claims dependent thereon are patentable over Sakomoto.

Because Sakomoto does not teach or suggest the method of claim 7 or the composition of claim 1, it cannot teach or suggest the dyed siloxane resin of claim 13, the method of claim 14, or the semiconductor wafer of claim 19, because these claims recite the same structural and process limitations discussed above. The same reasoning holds for the patentability of dependent claims 3-6, 8-12, and 15. Therefore, Applicants request this rejection of claims 1, 3-16, and 19 be withdrawn.

Second, the Examiner also rejected claims 1, 3-16, and 19 as being unpatentable over Kennedy, *et al.*, US 6,506,497 ("Kennedy"). Applicants traverse this rejection.

The Examiner points to Kennedy at Example 12 as teaching a reaction between tetraethoxysilane (TEOS), a methyltriethoxysilane (MTEOS), and 9-anthracene methanol, and at col. 6, lines 22-37 as teaching an equivalence between MTEOS and triethoxysilane (HTEOS, wherein the fourth valence of silicon is bonded to hydrogen).

The Examiner's characterization of col. 6, lines 22-24 is incorrect. Kennedy reads "a reaction mixture including silane reactants, for example HTEOS, or TEOS and MTEOS, or, [tetramethoxysilane] TMOS and [methyl trimethoxysilane] MTMOS...." The clear meaning of this passage is that Kennedy at most teaches equivalence between (i) a poly HTEOS, (ii) a copoly TEOS/MTEOS, and (iii) a copoly TMOS/MTMOS. Kennedy does not teach any copolymer of TEOS and HTEOS.

Further, Applicants have shown that HTEOS and MTEOS are not equivalent in Example 2 and Comparative Example 3, pp. 11-13 of the present specification. Compounds made with HTEOS (Example 2) had an average extinction coefficient at 248 nm about 30% greater than the average extinction coefficient at 248 nm for compounds made with MTEOS (Comparative Example 3) and had etch rates at least about 3.5-fold greater than compounds made with MTEOS. Therefore, the person of ordinary skill in the art would conclude HTEOS and MTEOS are not equivalent.

For at least these reasons, Applicants submit claims 1, 3-16, and 19 are patentable over Kennedy, and request this rejection be withdrawn.

5. *Conclusion*

The Examiner is invited to contact the undersigned patent agent at (713) 934-4065 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,

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